Louisiana Tech University Today and Sprinting Towards Tomorrow

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Abstract

As a primarily residential, high research institution, Louisiana Tech University is proud of the creativity and innovation that have been hallmarks of its residential student experience and rich academic environment since its opening in 1894. In March of 2020, all bricks and mortar of the 125-year-old campus lost their vibrancy when the SARS-CV-2 (coronavirus), COVID-19, and the subsequent safety measures caused the campus to alter operations as they knew them. The innovations and improvements implemented to elevate the campus to a new dimension of learning and working- virtual- were exercises in change management with the goal of creating viable solutions for our existing students, faculty, and staff, while preparing to serve larger numbers in the future. What follows is a description of how Louisiana Tech found success and opportunity in some of the most challenging times ever.

Keywords: Pandemic, solutions, infrastructure, scalability, technology

Introduction

Scaling technology capabilities for horizontal and vertical growth is what Louisiana Tech University aimed for when responding to effects of COVID-19 on campus operations. Scaling horizontally meant to strive for unification across all units and departments for campus technology practices, products, and procedures. This unification was geared to ensure efficiency of scale, thereby finding cost savings and continuity of support. Horizontal technology growth was also designed to bring with it the capacity for vertical growth in student enrollment and the continued enhancement of the campus technology infrastructure. To appreciate fully the immense task of implementing technology-rich solutions in the midst of a pandemic, an overview of what Louisiana Tech looked like pre-pandemic is helpful.

As a primarily residential, high research institution, Louisiana Tech University is proud of the creativity and innovation that have been hallmarks of its residential student experience and rich academic environment since its opening in 1894. Patents issued range from areas such as Agriculture to Nanotech. Degrees in the Liberal Arts fields and education are nationally recognized. Strong athletic teams serve as a cornerstone to foster community engagement.

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Living with the Lab and *Living with Cyber* are examples of programs where students are immersed in their respective fields, gaining a solid foundation of deep study during their freshman year. To have a Louisiana Tech college experience is to find a home away from home, a place to study, grow, and thrive.

From residential life to the research labs, students and faculty at Louisiana Tech connect and create through learning environments designed with the student experience in mind, and this learning environment most often includes proximity and presence. Students and faculty can teach, learn, and research in state-of-the-art classrooms and labs on campus. The near $38 million investment in an Integrated Engineering and Science Building for the University's College of Engineering, finished in the fall of 2019, is one such example of the financial investment and resource allocation made in bricks and mortar for this institution.

In March of 2020, the bricks and mortar of the 125-year-old campus lost their vibrancy when the SARS-CV-2 (coronavirus), COVID-19, and the subsequent safety measures caused the campus to alter operations as they knew them. Residence halls and apartments were emptied. Offices were vacated. Ballfields were quiet. Stages were dark. Labs were closed. Only essential personnel were left. The only audible hum of life left on campus was the restless machines that live in the catacombs of the ivory tower– the University computing center in the basement of the 16-story administration building. What COVID-19 did was awaken the sleeping innovation giant within. This chapter tells the story of an institution that scaled horizontally by creating unity and capacity for technology-mediated course delivery amid a global crisis and positioned itself for vertical scaling and continued capacity for growth in enrollment during and after the pandemic.

Lead Up

Pre-COVID-19 was on the minds of campus administration, the need for additional means to support technology on campus had become a pressing priority. After steep disinvestments in higher education in the State of Louisiana, stability in funding renewed in 2018, and such stability provided the opportunity to address long-overdue needs on campus.

The state of Louisiana has seen a drastic cut in the state's higher education spending between 2009 and 2018. The state funding during that time was cut by nearly 50% at many institutions in the University of Louisiana System (ULS), the System where Louisiana Tech is a member (Regents, 2019). Those cuts have affected ULS schools for the past ten years, and in some cases, ULS institutions are functioning on a fraction of the budgets enjoyed ten years ago. The dismal state disinvestment numbers for the UL System can be seen in Appendix A. In short, Louisiana Tech saw an over 54% cut in state funding from 2009 to 2017.

To give these numbers additional perspective, it is essential to look at the United States Southern Regional Educational Board (SREB) funding average. The (SREB) national average is $16,741 per Full-Time Equivalent (FTE) and the state of Louisiana average is $13,091 per FTE. That is a difference of $3,650 per FTE. This amount includes state appropriations plus tuition and fees. The neighboring southern states have the following for tuition and fees per FTE: Arkansas $8,467, Alabama $13,830, Mississippi $11,021, Louisiana $9,273 and the SERB average of $9914 (Board of Regents of the State of Louisiana Data Dashboard, 2019). These averages show that except for Arkansas, the state of Louisiana spends considerably less per student than the other neighboring southern states. Lean numbers such as these create strained budgets which often leads to delayed maintenance and stagnation of growth.

Being a casualty of budget constraints, Louisiana Tech University's information technology infrastructure was, and candidly still is, in need of an upgrade. The University operates on a 20-year-old mainframe for the student information system, finance, and human resources. The physical network needs an overhaul, including the network electronics (routers and switches) as well as hardware that comprises the network. Overall, the network barely works. With these pressing needs, the University made a strategic decision to migrate to WorkDay as a solution, and while WorkDay may be coming to save the day, migration will take place over the next four years. There are short-term pains of investing in a costly, labor-intensive, and time-consuming solution such as WorkDay, but the long-term benefits outweigh the immediate growing pains.

Growing pains come in various forms, and, when managing a technology overhaul in a 125-year-old organization, there are more needs than simply overseeing hardware, software, and system updates. Our campus was ready for an infusion of technology into the campus culture. Louisiana Tech has prided itself on the traditional campus environment, classroom learning, and a high-touch, Tech family experience. The use of advanced technology and automated processes in everyday administrative functions was not necessary because processes occurred just as easily with a pleasant walk to whichever office demanded the handwritten documents. Technology usage in all campus processes was not top priority in lean times. This created a campus culture that embraced the face-to-face colloquial visits in and out of the classroom. While these interactions and processes allow the Tech family to stay personally connected, in times like global pandemics, physical proximity is not possible. Thus arose the need for a mindset shift to accompany the technology overhaul.

Not only was the campus in need of a technology system revamp and enhanced technology to enable cutting-edge operations, but we were also in need of a structural revamp. The initiatives which supported online learning and instructional technology for the campus were

not budget priorities in the tight budget days, and Global Campus and the Center for Instructional Technology went dormant. It was in January 2020 that the University made a bold move. Amid financially difficult times for higher education in the State of Louisiana and amidst the investment in WorkDay, Louisiana Tech invested in their first-ever Chief Information Officer (CIO). This person was tasked to find innovative and efficient solutions stimulate and create state-of-the-art systems and practices.

The CIO position has a direct reporting line to the President, and the CIO is a member of the University president's executive leadership team. The new CIO embarked on a listening tour where he met with senior University leadership and various stakeholders to get a comprehensive understanding of the opportunities for improving the information technology services for the University. He also met individually with all the information technology staff around campus. What became clear during these meetings was that there were pockets of innovation and immense professional talent sprinkled across campus. However, the IT staff was decentralized across budget units and reporting lines.

As the CIO became more familiar with the inner workings of the University and its IT systems, the realities of virtual education and technology-mediated campus connections magnified by COVID-19 created an unimaginable urgency for embracing change. For some, the crisis was painful. For others, it was a welcome opportunity and challenge for deliberate and sustained focus. For all, it was an exercise in organizational change management, all while dealing with the "new" working environment.

Supporting culture change across organizations presents challenges, but we found that introducing a culture of technology-mediated interactions to a primarily residential institution in the middle of a global pandemic was revolutionary. Some institutions were well situated to capitalize on the COVID crisis to evolve their operational model; Louisiana Tech has used it to revolutionize many campus norms. Countless Zoom meeting sessions, an Incident Response Team, proposals and plans bounced as shared documents, vendor sales pitches, and committees laced with subcommittees were all outlets for innovation to ignite the spark of hope and trust in moving forward with integrating technology into increasing numbers of campus processes. Our CIO and his team worked tirelessly to make good on every promise made, and every task was undertaken with intent and focus across the campus. Out of necessity, the campus began to find solutions and opportunities for our technology-mediated realities. Technology integration efforts that were once dispersed in pockets across campus became beacons of hope that began to light the path forward.

Horizontal Applications Geared for Vertical Growth

Achieving almost 100% online operations for a campus that previously offered only 7% of courses online was a daunting challenge, and the need to standardize technologies became evident immediately. Across campus, pockets of innovation in technology-mediated course delivery were thriving, but there was little centralized product and practice. With the COVID-19 challenge appearing so abruptly, Louisiana Tech needed to pivot and implement a unified strategy for remote and online delivery of services and course work by capitalizing on existing strengths and filling in gaps with innovative solutions.

Quality Across the Board: Creating the Horizontal Foundation

Accomplishing these goals requires a centralized focus and well-defined strategies to fortify the IT foundations. Primary objectives in the expansion of technology enhancements were to create safe learning environments with high-quality instruction and remote work capabilities without losing functionality. Achieving safe learning environments meant distance teaching and learning for faculty and students, and teleworking for employees meant the implementation of altered processes and work locations.

The technology talent that existed before the pandemic across campus included pockets of innovation and organized efforts to bolster the advanced use of instructional technologies. Within the College of Education, a physical location called the HUB is outfitted with hardware and software to support faculty, staff, and students in that College. The College of Business has state-of-the-art interactive classrooms complete with student display huddle stations and live streaming capabilities. This College also boasts a mock trading room where students learn while sitting in a live-time stock trading ticker display. Pockets of innovation such as these were encouraging signs for growth. These unique and innovative activities provided vivid models for creating new and innovative virtual operations across campus. For a visual comparison of systems and tools in use pre-COVID and those implemented at Louisiana to address the challenges of technology-based operations, see Appendix B.

As part of the campus technology standardization, Zoom was selected as the University's means to offer synchronized (live streaming) course content. It also began to serve as the virtual conference room for meetings. At the same time, MediaSite was picked for asynchronous (pre-recorded) content. Zoom was selected because of the leadership's familiarity with the product and its ability to integrate with instructional technology tools the University already had in place. As documented in Appendix C, the volume of Zoom meetings held by those using campus-issued license bears testament to its prevalent use for connecting virtually. One of the Colleges had a campus-wide license for MediaSite, so, when the COVID situation impacted campus, the license was opened as a campus-wide resource. Appendix D highlights the

increased usage of this tool as an exponential increase from September 2019 through August 2020. The CIO also identified an open-source degree-completion mapping program to adapt to Louisiana Tech's specific needs for curriculum planning and student support. The program gives degree progress tracking capabilities to students and advisors, as well as to potential transfer students so they can map their existing and proposed progress through degree programs at Louisiana Tech.

To find efficiencies in student support, a product for degree completion mapping was brought into usage. This was also a strategic choice related to the leadership's access and knowledge, as he was aware of the opensource nature of the selected tool because of his work with the very team that made it; it is called Flightpath. This gives degree progress tracking capabilities to students and advisors, as well as to potential transfer students, which creates veins for students to map their potential progress should they choose to come to Louisiana Tech.

The University was using Moodle as its learning management system (LMS). While that student-facing technology was meeting most course delivery needs, there was a pressing need to measure how well students responded to course delivery in the new pandemic environments. The University acquired IntelliBoard, which is an LMS data analytic program used to assess student engagement and bolster student success. To help ensure the successes of students were their own successes, Tech purchased Respondus to support the test integrity of online examinations. These selections and integrations were key in finding instructional technology systems that could smoothly integrate with existing systems and assets and to facilitate faculty and student comfort and familiarity.

Faculty Preparation

The faculty, staff, and students at Louisiana Tech are worthy of these technology investments and are also worthy of the University investing in training on how to best use them. To meet expanded training needs, the University of Louisiana System organized efforts around providing professional development to all member institutions, including Louisiana Tech. These trainings, while immensely valuable, were generalized to meet the needs of all nine campuses in the System, which left many Louisiana Tech employees eager for training to meet unique campus needs. The CIO, who made significant contributions to the ULS training initiative, proposed a campus-specific training solution whereby subject matter experts on campus would be compensated for offering trainings on predetermined topics for faculty, and those who completed training would not only become better trained, but they would also gain monetary and/or evaluation-specific benefits.

Louisiana Tech offered specialized training for faculty in the Summer of 2020 to assist the faculty in using the new technology tools. It was essential to provide training supports to ensure that tools, existing and new, were used to improve the educational experience for students, staff, and faculty. Because of time constraints imposed by the pandemic, Louisiana Tech ensure that the most appropriate and meaningful training sessions were provided. The training sessions offered were chosen based on Spring Quarter survey feedback from the students, faculty, and staff, as well as input gathered by the University's academic leadership. The faculty training courses were centered around the following topics: data analytics, academic integrity, Video/Lecture Capture/Streaming, and an LMS boot camp to ensure instructional readiness. Similar training sessions were offered to faculty in the Spring Quarter, but much of the training was compressed and reactive to the abrupt pivot to remote and online environments.

Feedback from faculty indicated that they would prefer to have early access to next quarter's (Fall 2020) courses in Moodle to allow them extra time to prepare and set up their classes. Faced by the uncertainty in the Summer of a return to traditional modalities in the Fall, Fall 2020 classes were made available in Moodle for faculty members in the middle of July. With these supports and opportunities in place, the technology revolution that was Louisiana Tech's response to a global health crisis was becoming the new toolbox for the entire campus.

Quantity: Building Capacity for Vertical Enrollment

Building the infrastructure of hardware, software, technical support, and culture of technology integration has been the foundation for unifying and focusing students, faculty, and staff at Louisiana Tech And like most, if not all, higher education institutions, we recognize the need to find comfort in the emerging campus technology landscape, and the aim is to do so while enabling ourselves to serve increasing numbers of students.

To serve a larger student population post-COVID means that all existing and newly implemented solutions need to be characterized by scalability, versatility, sustainability, and range. Scalability was a consideration when looking to offer access to systems and support to increasing numbers of individuals. All the purchased and implemented tools were integrated without the restriction of numbers of users, and this removed the ceiling of how tall Louisiana Tech can grow vertically. Versatility was a consideration when selecting tools that could meet the needs of various types of University stakeholders as this broadened the user base. Sustainability of systems was considered on two axes- fiscal and functional. With no guarantee of additional funds for upgrades nor the opportunity to add personnel for support, choosing solutions that came with durability and user-friendliness is essential. Lastly, the range of who can be reached through new technologies was an important consideration to ensure that we

were not only preparing to serve those within our current reach, but we are also increasing the impact of the institution.

Considerations for vertical scalability to enhance enrollment numbers require that the institution embrace distance education and the culture of meeting students where they are, whether they are on campus or remote, even if that means the students are not in the seats of the lecture halls. We are now positioned to take our courses to the students wherever they can connect from, the lecture podiums to the faculty members in their teaching spaces of choice, and our office operations out of the room numbers listed in the campus directory. What's more, the opportunity to bring all the Louisiana Tech family into the digital landscape together creates the shared experience of change—a campus technology revolution.

Post-COVID: Creating New Business Approaches and Models

While the future of higher education in both the near and distant future is still being formulated, debated, and predicted, there are many steps Louisiana Tech is taking to ensure relevance in a post-COVID landscape. We are taking the opportunity to reevaluate current practices, procedures, and programs. A campus team has been convened to explore the developing terrain of education. This team's focus will be on internal workflows and opportunities as well as exploring external advancements and partnerships. There will be many cultural and functional challenges for the campus as we make technology-mediated interactions part of our new norms and attempt to steer our University towards vast opportunities for vertical growth. The tools we use for our work will be different. The industries we seek to prepare students to enter as professionals may look different. Our students and their expectations may be different. We will respond to the challenges.

Data analytics is an area where Louisiana Tech knows that advanced technology can be significantly impactful. Our learning management system and the add-on of Intelliboard will illuminate student success trends in ways that will trigger early intervention for at-risk students. This mechanism alone, if coupled with meaningful interventions, will increase retention, and a student retained is more easily achieved that a student recruited (Barshay & Aslanian, 2020). The more widespread implementation of University learning systems developed during the pandemic will be carried into post-COVID instruction, bringing more opportunity for this type of data collection, disaggregation, and intervention. In the eventual structure of student support systems, Artificial Intelligence (AI) will likely play a role in predicting student success so that students, faculty, and even advisors and/or tutors can intervene. With after-the-fact data, real-

time data, and predictive data, we will be able to formulate creative and responsive ways to bolster student success.

Predictions about the landscape of higher education also include potential changes to the demographic served. One-quarter of incoming first-year students are considering delaying a year, and this delay is being called a gap year (Runcie, 2020). Not only will the flow of incoming freshman potentially be dampened, but the need for non-traditional students to retool and reskill will also likely increase as unemployment, and career shifts are predicted to plague the current workforce (Terralever, 2019). International students may feel forgotten and leave vacant the seats they once occupied in US institutions. Not only will the numbers and demographics of the students we serve shift and change, but perhaps the expectations of those students will look different in the future. It is quite possible that students will begin to question the traditional, in-person requirement of education. The post-pandemic student may also expect a more flexible instructional modality than bricks and mortar operations offer.

Conclusion

The COVID-19 Pandemic has had an enormous impact on the way that practically every aspect of life since March 2020, and no one can really tell when that impact will end. It is important to note that the responses that have been made to the pandemic are more than hasty reactions, they should be framed as expedited advances and improvements in the way that the university operates. The pandemic happened to be the cause that allowed the university to make these advances and investments that will provide long-term dividends. Apocalyptic predictions of big tech merging with big name institutions vs. a complete return to the way things were pre-COVID are the two ends of the spectrum. But at Louisiana Tech, the innovations and improvements made during the pandemic have been executed in a way that highlights pathways to sustainability regardless of the circumstances that arise after the pandemic. What has occurred in the last six months is change could not have predicted or imagined for higher education. As long as we manage the change well and aim our goals at the positive human experience of shared interactions of learning, we will remain relevant, and the campus technology revolution will frame a bright future for Louisiana Tech.

References

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Appendix A

University of Louisiana System (ULS) State Provided Funding Decreases 2009-2017

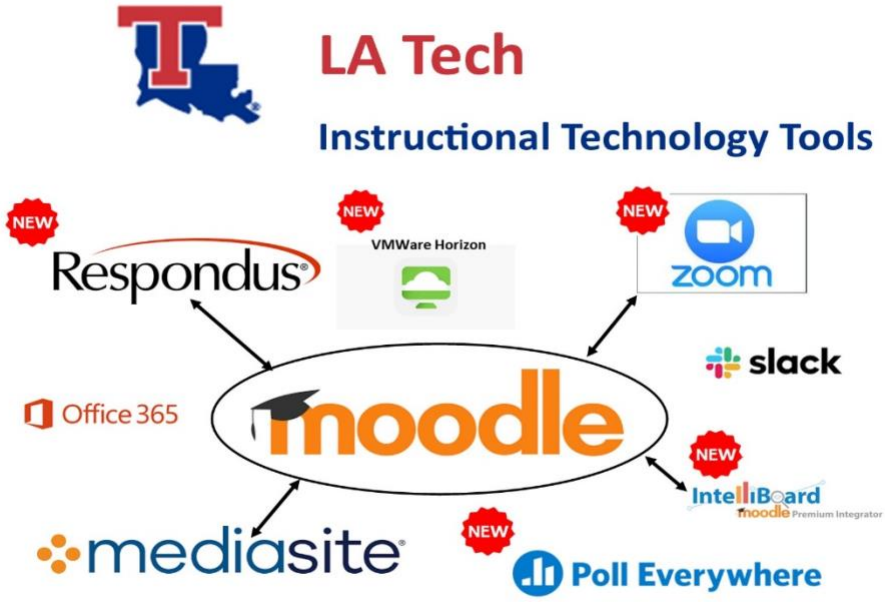
ULS Institution	State Funding per Student 2009 in dollars ($)	State Funding Per Student 2017 in dollars ($)	Percentage Change
Grambling State University	5968	2861	52.1%
Louisiana Tech University	6750	2873	57.4%
McNeese State University	5877	2947	49.9%
Nicholls State University	4323	2767	36%
Northwestern University	7666	2572	66.4%
Southeastern University	9812	2605	73.4%
University of Louisiana Lafayette	6264	3238	49.3%
University of Louisiana Monroe	6954	3327	52.2%
University of New Orleans	7526	4592	39%

https://masterplan.regents.la.gov/home/data/data-dashboard/

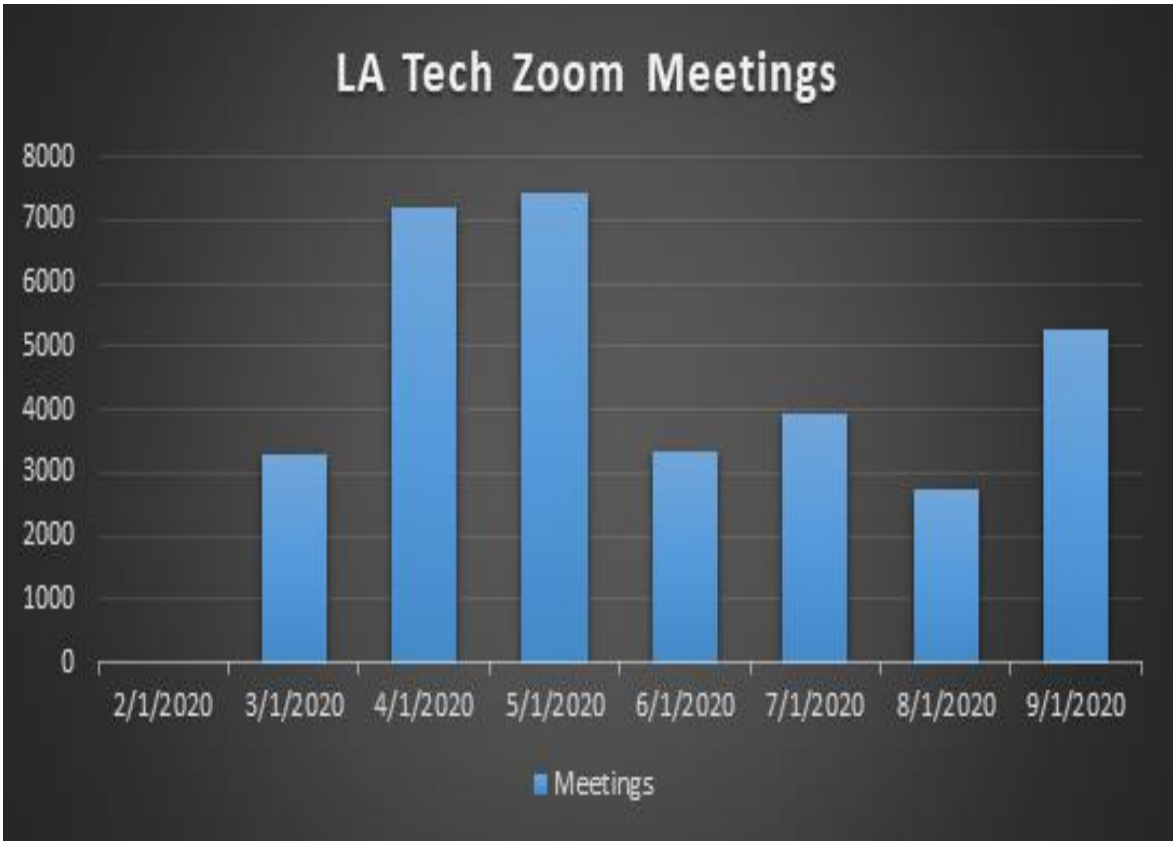
Appendix B

Before March 13, 2020

After March 17, 2020



Appendix C



Campus license was purchased in March 2020, with usage increasing through spring quarter (March-May), leveling off for summer (June-Aug), and increasing again for fall quarter (Sept).

Appendix D

MediaSite Usage Increase Sept 2019- Aug 2020

Result Summary

Total Views: 118821

Views:	13 Live | 118808 On-Demand
Watched:	3280 of 10809 Presentations
Time:	30813:14:16 Total Watched (h:mm:ss)
Peak:	64 Connections
Clients:	4714 Users | 12272 IP Addresses | 15 Referrers
Authored:	0 Live Broadcasts | 5 Schedule Recorded

Date Activity | Presentations | Users | IP Addresses | Referrers | Platforms | Sources

Show ▾ By ▾

Viewing Growth by Month